



# Texas Street Lighting Assessment

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### About the South-central Partnership for Energy Efficiency as a Resource (SPEER)

SPEER is a regional non-profit organization dedicated to increasing and accelerating the adoption of energy efficient products, technologies, and services in Texas and Oklahoma. Much of SPEER's work focuses on finding the best market-based approaches to increase energy efficiency and overcoming persistent market barriers. The views expressed in this paper do not necessarily reflect the views of all of SPEER's members, funders, or supporters. For more information about SPEER, please visit: [www.eepartnership.org](http://www.eepartnership.org)

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## I. INTRODUCTION

Street lighting is typically a large share of municipal's electricity consumption. With LED lighting retrofits, cities can realize significant savings. Upgrading a city's existing street lights to a high efficiency LED lights can provide the city with up to a 50% reduction in street lighting energy use. The street lighting segment is very complex. SPEER's, the South-central Partnership for Energy Efficiency as a Resource, efforts have included identifying cities and utilities that have overcome barriers and identified solutions, as well as researching utility rate structures to determine whether or not LED rate structures exist. This is mostly due to the regulatory changes that have occurred within the past decade.

In Texas, several cities (Austin, San Antonio, Houston and El Paso) have completed retrofits or are currently in the process of retrofitting their high energy consumption street lighting with high efficiency LED street lights. In the U.S. there have been over a dozen large to mid-size cities, from Chicago to Boise, that have completed retrofit projects or are in the process of replacing their street lights with new efficient LED street lights. In total these cities have replaced approximately 600,000 street lights and have seen more than 198 million kWh in reduction<sup>1</sup>.

Cities can see significant energy and maintenance savings by replacing their street lights with high efficiency LED lamps. Although, in the past cities have struggled with the implementation of high efficiency street lighting (particularly LED's) for many reasons. Street lighting projects have often seen delays due to misinformation or lack of information that continues to surround this technology. Only recently have the quality and pricing of the LED products made them a viable option for larger projects. The purpose of this report is to provide a brief summary of research on the barriers to retrofitting street lighting with LED's in Texas cities.

## II. CITIES INTERVIEWED

The information obtained on the barriers to retrofitting street lighting to high efficiency LED's seen in cities is based on interviews with city representatives managing street lighting technology and/or responsible for such retrofit projects. The cities (listed below) provided SPEER responses to questions about their current street lighting technology, successful implementation of high efficiency LED retrofits and barriers during the retrofitting process, as well as possible consideration of future retrofits. In conjunction with interviewing city representatives throughout Texas, SPEER spoke with several utility representatives that provide electric service to the cities we were interviewing. These interviews helped us gain a well-rounded perspective on the market, where we could document successful implementation of LED street lights, as well as barriers to retrofits, in this region.

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<sup>1</sup> The South-central Partnership for Energy Efficiency as a Resource's (2014). *LED Street Lighting Retrofit: Best Practice*. Retrieved from: [https://eepartnership.files.wordpress.com/2014/02/street-lighting-best-practice\\_final-8-1-14.pdf](https://eepartnership.files.wordpress.com/2014/02/street-lighting-best-practice_final-8-1-14.pdf)



#### Cities Interviewed:

- Houston
- El Paso
- Dallas
- Austin
- San Antonio

### **III. BARRIES**

Through the city interviews SPEER has identified several significant barriers to the implementation of high efficiency LED street lighting, which are common in most cities. These barriers have been largely responsible for the delay of street lighting retrofits being implemented as an energy saving or cost saving project.

#### 1. Street Lighting Ownership

The city and/or utility ownership structures have been found to be a significant issue in the process of initiating retrofit projects in most Texas cities, due to deregulation and other policy changes in the past decade. Due to the lack clarity surrounding ownership, cities and utilities often do not know who owns which street lights within their jurisdiction or service territory. Whether a city owns, maintains, or simply pays for electricity for street lights varies from city to city and this has a large impact on whether the city will save, the utility will experience reduced revenues, or who benefits from reduced maintenance as a result of investing in lighting retrofits. This creates a split benefit which prevents cities and/or utilities from investing in LED street lighting. We found that there are few cities or utilities that know the exact number of lights or what type of lamps are being used, relying instead on estimates and negotiated billing agreements. So, simply creating an accurate inventory of the entire jurisdiction's street lights, and who maintains them simplifies the process of calculating ROI and can assist in getting a city and/or utility moving forward with a retrofit project.

#### 2. New Technology

The newness of LED street lighting has also raised concerns among cities, often due to early product failure, or high costs. The lack of long-term history with this technology and the up-front cost involved in LED street lighting projects adds to the complexity of assessing the potential savings, which caused some city employees we interviewed to put retrofit projects on hold while they address simpler, tried and true technologies. New products come out so often that it difficult for them to determine which product is best for particular applications. These concerns have led to new LED street lighting pilot programs, in cities like San Antonio, where several technologies have been installed and tested. While pilot programs can be effective and provide very useful information for cities it can delay wide scale deployment.

#### 3. Utility Tariffs

SPEER also found another barrier in Texas, which results from the newness of LED street lighting technologies and projects, is the lack of LED street lighting rate structures offered from the utilities. Few



utilities have considered or adopted street lighting tariffs or rate structures which enable an interested city to move forward with a project proposal. As noted above, street lights are not metered, so therefore the amount billed to the city is based upon an estimated calculated wattage of the lamp and the estimated number of lamps in their territory (this is where inventory is key). This fee is usually a flat fee per lamp based on the calculated wattage of the installed lamp, listed in the utilities tariff. There are many utilities that have not included a LED rate in their street lighting tariff, thus not allowing the city to calculate the potential savings after a retrofit to LED lamps. Some utilities also have a maintenance charge included in the street lighting tariff, which should also be reduced due to the new technology; however, some cities are responsible for their own maintenance or bulb replacement. By ensuring that a new street lighting tariff is negotiated to reflect the energy savings that a LED replacement, and the resulting reduced maintenance provides, would allow more cities to consider street lighting retrofit projects.

Street lighting energy consumption is entirely predictable throughout the year, based on dusk to dawn hours. Summer peak demand is avoided entirely, which makes the electricity cost for street lighting very low, so this increases the time required for return on investment for the utility implementing a program. This may be offset by negotiating a shared cost of investment into the rate which creates immediate savings for the city, with a shorter return on investment by the utility.

#### 4. Implementation Process

Texas also, like many states, lacks a consistent implementation process or policy for cities to pursue street lighting projects. This is a significant barrier for the mid-size to smaller cities that do not have the staffing to create an implementation process. An implementation model that can be provided to smaller and mid-size cities will not only help them to evaluate the role of high efficiency LED street lighting in energy savings. Such a model will also provide them with the steps in implementing a retrofit project which can streamline their efforts, and result in significantly more street lighting retrofit projects in the state. SPEER will develop the implementation models, which will be shared with smaller and mid-size cities in an effort to stimulate new projects.

## IV. GOING FORWARD

SPEER has determined that there is enormous opportunity for cities and utilities in retrofitting street lights to LED. As we move forward we plan to share information with cities and utilities to assist them in understanding the barriers, opportunities and the implementation of retrofit projects in their areas. SPEER plans to create an Implementation Guide for cities and utilities to further assist them in the process of planning and implementing retrofit projects.



## V. APPENDIX I

**Table 1 : Street Lighting Program Contact Information**

City	Department Leading Street Lighting Program	Contact Information
Houston, TX	Director's Office – Administration and Regulatory Affairs	Alex Heim Administration & Regulatory Affairs Department 832.393.0277   <a href="mailto:alexander.heim@houstontx.gov">alexander.heim@houstontx.gov</a>
Austin, TX	Austin Energy	Norman Muraya Engineer 512.482.5323 <a href="mailto:norman.muraya@austinenergy.com">norman.muraya@austinenergy.com</a>
Dallas, TX	Public Works Department	Jesse Dillard Energy Manager 214.948.5366 <a href="mailto:jesse.dillard@dallascityhall.com">jesse.dillard@dallascityhall.com</a>
San Antonio, TX	Office of Sustainability	Phillip Gates Energy Manager 210.207.1444 <a href="mailto:phillip.gates@sanantonio.gov">phillip.gates@sanantonio.gov</a>
El Paso, TX	Office of Sustainability	Lauren Baldwin Sustainability Program Specialist 915.208.9693 <a href="mailto:BaldwinLD@elpasotexas.gov">BaldwinLD@elpasotexas.gov</a>

